

National Account in Matrix Formats

EE406: Contemporary Economic Issues

Semester 1/ 2021

Faculty of Economics, Thammasat University

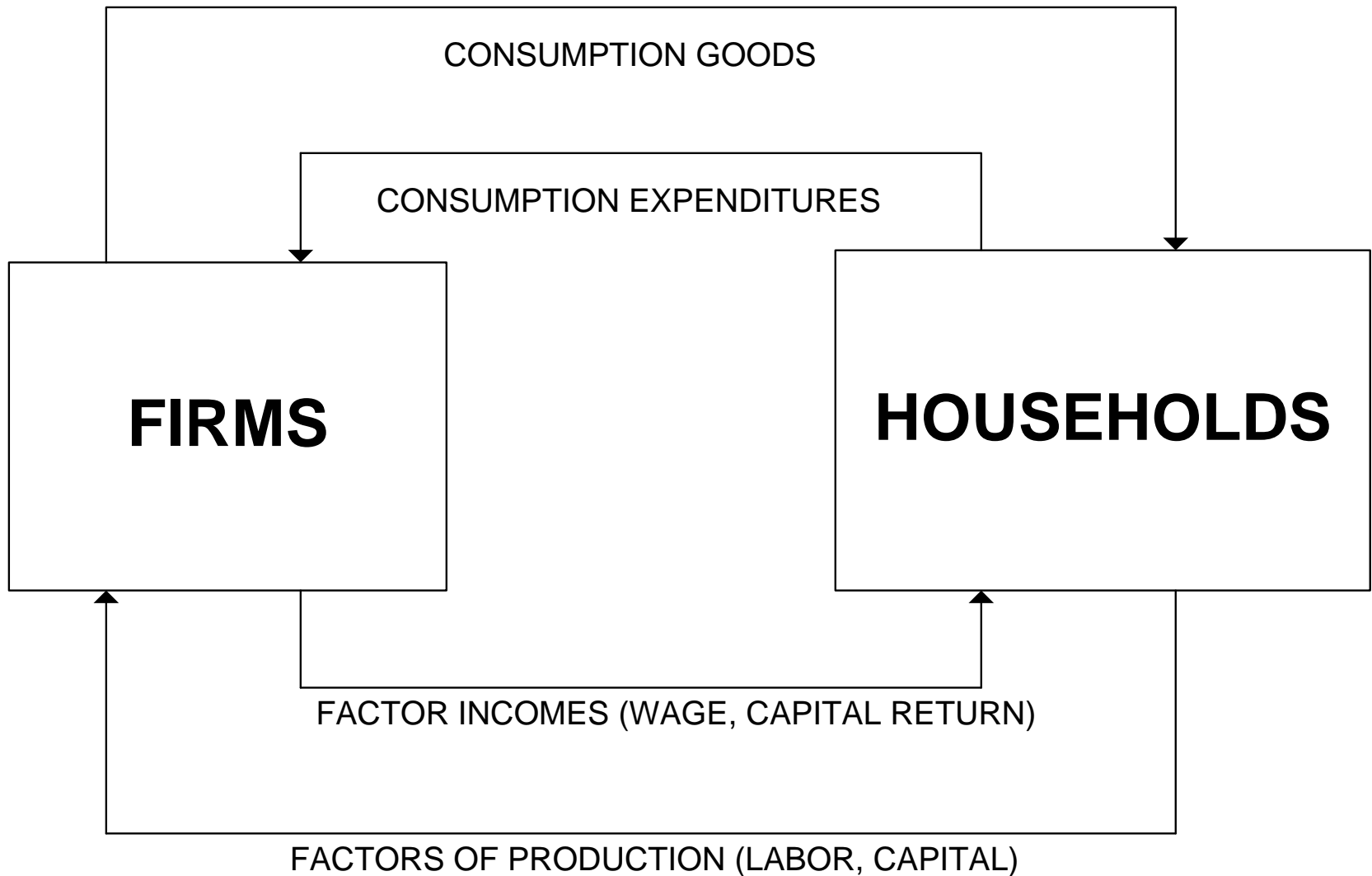
Classification of Matrix Accounting

(1) Social Accounting Matrix (SAM)

(2) Supply and Use Table

(3) Input – Output Table (IO Table)

Circulation within the economy



Structure of SAM Table

	AGR-A	NAGR-A	AGR-C	NAGR-C	LAB	CAP	U-HHD	R-HHD	TOTAL
AGR-A			Production Outputs						225
NAGR-A									
AGR-C	Input – Output Table						Consumption Expenditures		225
NAGR-C									250
LAB	Value Added								117
CAP									158
U-HHD					Factor Incomes				150
R-HHD									125
TOTAL	225	250	225	250	117	158	150	125	

SAM Exercise : Income and Expenditure Tables

PRODUCTION (FIRMS) EXPENDITURE

	AGRI activity (AGR-A)	NON-AGRI activity (NAGR-A)
AGR-C	60	40
NAGR-C	40	60
LABOR	62	55
CAPITAL	63	95
TOTAL	225	250

INCOME

	AGR-A	NAGR-A
AGRI Commodity (AGR-C)	225	
NON- AGRI Commodity (NAGR-C)		250
TOTAL	225	250

CONSUMPTION (HOUSEHOLDS) EXPENDITURE

	URBAN-HHD (U-HHD)	RURAL-HHD (R-HHD)
AGRI Commodity (AGR-C)	50	75
Sales of NON- AGRI Commodity (NAGR-C)	100	50
TOTAL	150	125

INCOME

	URBAN-HHD (U-HHD)	RURAL-HHD (R-HHD)
LABOR	60	57
CAPITAL	90	68
TOTAL	150	125

Computing GDP from Exercise 2

	AGR-A	NAGR-A	AGR-C	NAGR-C	LAB	CAP	U-HHD	R-HHD	TOTAL
AGR-A			225						225
NAGR-A				250					250
AGR-C	80	40					50	75	225
NAGR-C	40	60					100	50	250
LAB	82	55							117
CAP	83	95							158
U-HHD					60	90			150
R-HHD					57	68			125
TOTAL	225	250	225	250	117	158	150	125	

GDP from VA	Value-Added	275
-------------	-------------	-----

GDP from Net Output	Net Output	Total Output	- Input	= Net Output
	Net Output	475	-200	275

GDP from Income	Income	275
-----------------	--------	-----

GDP from Expenditure	Expenditure	275
----------------------	-------------	-----

Gross Domestic Product

- Main measure of economic activity and growth
- Can be measured in three ways:

Output = Expenditure = Income *or* $GDP(O) = GDP(E) = GDP(O)$

Supply = Demand:

Domestic Production + Imports = Household Expenditure +
Intermediate Consumption + Capital Formation + Exports + Change in
Stocks

$GDP(O) = GDP(E)$

Domestic Production – Intermediate Consumption = Household
Expenditure + Capital Formation + Change in Stocks + Exports -
Imports

$GDP(I) = \text{wages and salaries} + \text{profits}$

Compilation and Balancing in Matrix Format

- Each component can be measured separately, annually, quarterly or monthly
- Results in three different estimates of GDP
- Data confrontation exercise, known as 'GDP balancing' to reconcile these estimates
- Results in one 'best' estimate of GDP

2. Supply and Use Tables

- Enables data reconciliation at a more disaggregated level:
 - GDP(O) and GDP(E) by product
 - GDP(O) and GDP(I) by industry

2. Format of Supply and Use Table

Total Supply				
PRODUCT	OUTPUT BY	I	TAXES	SU
	INDUSTRY	+ M	+ AND	= PP
		P	SUBS	LY
Product Breakdown	Imports	T&T margins	Taxes on products	Subs. on products
Total Output				Total Supply

=

Total Use								
PRODUCT	INTERMEDIATE	FINAL	INVESTM	EX	US			
	CONSUMPTION BY	+ CONSUMP	+ ENT	+ P	= E			
	INDUSTRY	TION						
Product Breakdown	HH	NPISH	GG	GFCF	Inventories	Valuables	Exports	Total Use
Total Intermediate Consumption								
Compensation of Employees								
Gross operating surplus								
Taxes on production								
less subsidies on production								
Total Output								

GVA



2. Format of Supply and Use Table

	Supply <i>Product</i>	Intermediate use <i>Industry</i>	Final use		Total
<i>Product</i>		Intermediate use (I)	Domestic final use (F)	Exports (E)	Total use by product (U)
<i>Industry</i>	Domestic supply (S^D)				Total output by industry (GO)
Rest of World	Imports (M)				
		Value added (VA)			
	Total supply by product (S)	Total input by industry			

3.Format of Input – Output Table

One country format

	Industry	Final use		Total
Industry	Intermediate use	Domestic Final use	Exports	Total Output
	Imports			
	Value added			
	Total Output			

3.Format of Input – Output Table

Format of 3-country IO Table

		Country A	Country B	Rest of World	Country A	Country B	Rest of World	
		Intermediate	Intermediate	Intermediate	Final	Final	Final	
		<i>Industry</i>	<i>Industry</i>	<i>Industry</i>	domestic	domestic	domestic	Total
Country A	<i>Industry</i>	Intermediate use of domestic output	Intermediate use by B of exports from A	Intermediate use by RoW of exports from A	Final use of domestic output	Final use by B of exports from A	Final use by RoW of exports from A	Output in A
Country B	<i>Industry</i>	Intermediate use by A of exports from B	Intermediate use of domestic output	Intermediate use by RoW of exports from B	Final use by A of exports from B	Final use of domestic output	Final use by RoW of exports from B	Output in B
Rest of World (RoW)	<i>Industry</i>	Intermediate use by A of exports from RoW	Intermediate use by B of exports from RoW	Intermediate use of domestic output	Final use by A of exports from RoW	Final use by B of exports from RoW	Final use of domestic output	Output in RoW
		Value added	Value added	Value added				
		Output in A	Output in B	Output in RoW				

ASEAN+3 - Year 2000 IO Table – Intraregional analysis

Structure of Asian International Input-Output Table

	Intermediate Demand (A)										Final Demand (F)										Export (L)					Total Outputs	
	Indonesia	Malaysia	Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A.	Indonesia	Malaysia	Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A.	Export to Hong Kong	Export to United Kingdom	Export to France	Export to Germany	Export to R.O.W.		Statistical Discrepancy
code	(AI)	(AM)	(AP)	(AS)	(AT)	(AC)	(AN)	(AK)	(AJ)	(AU)	(FI)	(FM)	(FP)	(FS)	(FT)	(FC)	(FN)	(FK)	(FJ)	(FU)	(LH)	(LE)	(LF)	(LG)	(LW)	(QX)	(XX)
Indonesia	A ^I	A ^M	A ^P	A ^S	A ^T	A ^C	A ^N	A ^K	A ^J	A ^U	F ^I	F ^M	F ^P	F ^S	F ^T	F ^C	F ^N	F ^K	F ^J	F ^U	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^I	X ^I
Malaysia	A ^M	A ^M	A ^M	A ^M	A ^M	A ^M	A ^M	A ^M	A ^M	A ^M	F ^M	F ^M	F ^M	F ^M	F ^M	F ^M	F ^M	F ^M	F ^M	F ^M	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^M	X ^M
Philippines	A ^P	A ^P	A ^P	A ^P	A ^P	A ^P	A ^P	A ^P	A ^P	A ^P	F ^P	F ^P	F ^P	F ^P	F ^P	F ^P	F ^P	F ^P	F ^P	F ^P	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^P	X ^P
Singapore	A ^S	A ^S	A ^S	A ^S	A ^S	A ^S	A ^S	A ^S	A ^S	A ^S	F ^S	F ^S	F ^S	F ^S	F ^S	F ^S	F ^S	F ^S	F ^S	F ^S	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^S	X ^S
Thailand	A ^T	A ^T	A ^T	A ^T	A ^T	A ^T	A ^T	A ^T	A ^T	A ^T	F ^T	F ^T	F ^T	F ^T	F ^T	F ^T	F ^T	F ^T	F ^T	F ^T	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^T	X ^T
China	A ^C	A ^C	A ^C	A ^C	A ^C	A ^C	A ^C	A ^C	A ^C	A ^C	F ^C	F ^C	F ^C	F ^C	F ^C	F ^C	F ^C	F ^C	F ^C	F ^C	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^C	X ^C
Taiwan	A ^N	A ^N	A ^N	A ^N	A ^N	A ^N	A ^N	A ^N	A ^N	A ^N	F ^N	F ^N	F ^N	F ^N	F ^N	F ^N	F ^N	F ^N	F ^N	F ^N	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^N	X ^N
Korea	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	F ^K	F ^K	F ^K	F ^K	F ^K	F ^K	F ^K	F ^K	F ^K	F ^K	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^K	X ^K
Japan	A ^J	A ^J	A ^J	A ^J	A ^J	A ^J	A ^J	A ^J	A ^J	A ^J	F ^J	F ^J	F ^J	F ^J	F ^J	F ^J	F ^J	F ^J	F ^J	F ^J	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^J	X ^J
U.S.A.	A ^U	A ^U	A ^U	A ^U	A ^U	A ^U	A ^U	A ^U	A ^U	A ^U	F ^U	F ^U	F ^U	F ^U	F ^U	F ^U	F ^U	F ^U	F ^U	F ^U	L ^H	L ^E	L ^F	L ^G	L ^W	Q ^U	X ^U
Freight and Insurance	BA ^I	BA ^M	BA ^P	BA ^S	BA ^T	BA ^C	BA ^N	BA ^K	BA ^J	BA ^U	BF ^I	BF ^M	BF ^P	BF ^S	BF ^T	BF ^C	BF ^N	BF ^K	BF ^J	BF ^U							
Import from Hong Kong	HA ^I	HA ^M	HA ^P	HA ^S	HA ^T	HA ^C	HA ^N	HA ^K	HA ^J	HA ^U	HF ^I	HF ^M	HF ^P	HF ^S	HF ^T	HF ^C	HF ^N	HF ^K	HF ^J	HF ^U							
Import from the R.O.W.	WA ^I	WA ^M	WA ^P	WA ^S	WA ^T	WA ^C	WA ^N	WA ^K	WA ^J	WA ^U	WF ^I	WF ^M	WF ^P	WF ^S	WF ^T	WF ^C	WF ^N	WF ^K	WF ^J	WF ^U							
Import Duty and Sales Tax	DA ^I	DA ^M	DA ^P	DA ^S	DA ^T	DA ^C	DA ^N	DA ^K	DA ^J	DA ^U	DF ^I	DF ^M	DF ^P	DF ^S	DF ^T	DF ^C	DF ^N	DF ^K	DF ^J	DF ^U							
Value Added	V ^I	V ^M	V ^P	V ^S	V ^T	V ^C	V ^N	V ^K	V ^J	V ^U																	
Total Inputs	X ^I	X ^M	X ^P	X ^S	X ^T	X ^C	X ^N	X ^K	X ^J	X ^U																	

ASEAN+3 - Year 2000 IO Table – Intraregional analysis

Matrix and sub-matrices of multiregional Input-Output table

		China	Indonesia	Japan	Korea	Malaysia	Taiwan	Philippines	Singapore	Thailand	USA
		sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8	sec 1 ... sec 8
China	sec 1 ... sec 8										
Indonesia	sec 1 ... sec 8										
Japan	sec 1 ... sec 8										
Korea	sec 1 ... sec 8										
Malaysia	sec 1 ... sec 8										
Taiwan	sec 1 ... sec 8										
Philippines	sec 1 ... sec 8										
Singapore	sec 1 ... sec 8										
Thailand	sec 1 ... sec 8										
USA	sec 1 ... sec 8										



Multipliers of bilateral influence



Multipliers of domestic influence